



TRAINING STRATEGY

“The athlete that will win a distance race will be the fastest person with the best fatigue resistance.”

Build a Better **Race Pace**

by Chris Puppione

Part 1 of 2

Building a Better Race Performance

In the system of modern training, coaches do not perform ritualistic acts of voodoo to conjure up spectacular performances in their athletes. They do not haphazardly assign general plans based on antiquated training philosophies, nor do they indulge in prescribing sessions steeped in fad-like hype from the Internet. In discussing modern training theory with coaches Brad Hudson, Antonio Cabral, and Renato Canova, it becomes apparent that in preparing athletes for competition, these men concentrate on constructing the final result through training methods designed with absolute precision.

“In the modern system of training, you must analyze the level of the qualities you want to assemble together in order to build the performance,” says Canova—an Italian-born coach who functions as the national coach of Qatar, as well as personal coach to steeplechase world-record holder Saif Saaed Shaheen. “As a coach, I work around this specific speed to produce the best race possible.”

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Building a better performance—it sounds so appealing in its simplicity. Hudson, coach to many of America’s top distance running talents in his Boulder Performance Training Group, calls this process of specific training “building a race threshold.” Cabral, once an elite 1500-meter runner in his own right who has coached Olympians in his native Portugal, says that while all paces of training can contribute to an athlete’s fitness, only those closer to race pace build the performance. According to these coaches, the desired race is built through a period of specific training that is designed to develop, within you, a specific endurance for your given race distance. It is this specific endurance that will improve your capacity to last longer at your goal race pace, and it is at the center of the modern training philosophy for developing better distance runners.

What is the Greater Significance of Specific Endurance?

If the nucleus of the modern training system is the development of specific endurance, it would seem logical to determine what this is exactly. Canova describes it as being a combination of speed and endurance, where each enhances the capacity of the other in order to produce a specificity of movement at a particular pace. This specificity is in turn one of extension, where the athlete is looking to create what physiologists call a maximal lactate steady state, or MAX LASS, and then

extend that steady state capacity at race pace over a greater frame of time. In track events like the steeplechase, 5000 meters, and 10000 meters, there is a great need to develop a longer MAX LASS so that the middle stages of a race can be performed with less stress and lactate accumulation. Events such as the 800 meters and 1500 meters do not last long enough for a MAX LASS to be reached, but an athlete can definitely create specific endurance for these races as well.

MAX LASS improvement is the result of an athlete’s improved capacity for specific lactate management for the given race distance and velocity. This can only happen when the athlete is able to train at or within close proximity to goal race pace for extended periods of time. Simply stated, the athlete that will win a distance race will be the fastest person with the best fatigue resistance. This is the purpose behind training; to achieve specific endurance. This MAX LASS or specific endurance, however, cannot be created until the general lactate threshold of an athlete is developed to a very high level.

Just as general aerobic running is the foundation for training to improve the general lactate threshold (which is often measured at a blood-lactate level of 4 mmol), the general lactate threshold (or GLT) is in turn the aerobic base for specific endurance. Therefore, specific endurance, says Canova, is not directly linked to maximum velocity or strength, but more so to a higher GLT. Hudson agrees, stating that he has his athletes spend 2-3 months emphasizing the improvement of the GLT before shifting much of the training focus to

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specific endurance sessions. “First develop the base,” says Hudson. “This does not mean just a lot of running, but developing the threshold around 4 mmol in the first period of training, which for us is much of the winter.” This first period, which many refer to as the “general training period”, is where preparations are made for specific endurance training, which will then allow athletes and coaches to build the goal race performances in the “specific training period.”

The General Training Period

In order to handle the intensity of the work to be performed in the specific training period (namely specific endurance sessions), an appropriate base must be established in the general period of training. This means performing long runs at moderate intensities, building strength, and preparing the nervous system. “In this time, we try to improve resistance, strength, and rapidity,” says Canova. “For example, we can go for very long runs (even two hours long for a miler), we can go to the gym and build strength by using light weights, and we can implement exercises for a short time at max speed for developing the nervous system.” Canova goes on to mention that during this general period, an athlete is asked to pay attention to the internal load of training, meaning that the workouts are centered on the individual’s perceived level of effort, not on what the stopwatch reads. “I do not care too much about the evidence of training (i.e. split times). I just want to know that the quality of effort is present.” An example of such a

session may be a set of longer repetitions, where the athlete is asked to perform at tempo effort, but is not supplied a specific pace to hit for each bout. Another example could be a traditional fartlek workout, where the athlete may be called upon to feel out 10K effort level for the faster segments.

More importantly, the general training period is time for athletes to do general work that will increase all the qualities that they’ll need to perform the intense sessions of the specific training period. Canova equates this to preparing minestrone soup, saying that “you put potatoes,

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tomatoes, beans and other vegetables in the cold water before boiling. It does not matter what order the ingredients go into the pot, just as long as they are all in there before boiling.” The general period is the time to assemble all the elements of training you will need before you really start to “cook” with the specific endurance work.

Dathan Ritzenhein, who is coached by Hudson, has shown over the last two winters that this general period (which focuses on enhancing resistance, strength, and rapidity) has proved very beneficial for him, as he has turned in solid races on the European cross country circuit. Hudson has had his star pupil performing regular sessions addressing the improvement of the general lactate threshold and short, a lactic hill sprints on a steep grade in addition to a steady mileage base. “This general period is where you must develop the muscular system to be strong enough to handle running at race pace with ease, as well as address the aerobic system by building a better base at 4 mmol.” Hudson goes on to say that

Ritzenhein performs these sessions, particularly the lactate threshold workouts, with relative ease—recovering quickly and always able to take on more. This reflects the notion that the key in any training program is not necessarily working the hardest, but working intelligently.

Once the general period of training is complete, which Canova says can be anywhere from 2-3 months depending on an athlete’s experience and seasonal focus, there is a need for specific training in order to build the desired race performance. Cabral takes special note of just how long an athlete should partake in the general training period, as there can be potential drawbacks in sustaining this type of training. “Eventually, the athlete will reach a stage where conditioning cannot be further improved,” he says. “As the athlete matures, less and less time needs to be spent on basic conditioning. In fact, a high level of fitness does not equate to elite performances in a seasoned athlete—only specific training will accomplish this once peak fitness is established.”

The Anatomy of a Specific Training Period

“A common misconception is that all training contributes to a race performance,” Cabral continues. “In reality, very little contributes.” It is well known that the potential for performance enhancement is increased when an athlete’s training becomes more specific to the task that will be performed in competition. This speaks directly to

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the principle of specific adaptation to imposed demands (SAID), which states clearly that physiological adaptations are specific to the method or mode of training. Because distance running events, particularly the steeplechase, the 5000 meters, and the 10000 meters, require a fair mixture of speed and endurance, as well as adaptations of the cardiovascular, pulmonary, and metabolic systems to the demanding nature of these races, it is an absolute necessity to equip the body with the right tools to perform on race day. This is why there is the need for athletes to develop specific endurance for their individual events in order to succeed in achieving their goals.

The key to creating specific endurance is to work around the goal pace of the race performance the athlete is looking to build. This requires a delicate mix of endurance and speed. “Building specific endurance involves the following 3 parameters,” says Canova. “Global volume of training, length of tests performed, and the length of recovery between those tests.” The global volume of training means looking at the entire portfolio of an athlete’s training program, not just one snapshot. It is the accumulation of many workouts that produces the desired result, not one particular session. The length of tests (or repetitions, or intervals, or runs) is dependent upon the task of the day at a certain time of the season for an individual athlete—there is no universal answer. As for the length of recovery, this is further dependent upon all of the above variables, as well as an athlete’s individual ability

to recover from a particular type of workout. This is where the scientific aspect of training becomes less and less important. This is where the focus of training shifts from the internal effort to the external result. “People get too caught up in exact science,” says Hudson. “We use more science in the early period of the year, but in the final period it is not as important. It is great to know the science and how to apply it where it is necessary. But in building specific endurance—it is not a matter of science. It is the time (on the watch) that is important.”

“A performance is mathematic,” says Canova. “During this period of specific training, you must take care to address the external load. If an athlete wants to run 10,000 meters in 27:30, this equates to 2:45 per kilometer. So, I work around this specific speed.” Hudson concurs, stating that he has his runners focus

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on 3 particular “race support pace” sessions during the specific training period—longer intervals just slower than race pace, goal race pace intervals, and medium intervals just a bit faster than goal race pace. How much is “just slower” and “just a bit faster”? Well, that all depends, says Hudson. “When we are in the early weeks of the specific period, we can be as much as 10% faster or slower than goal race pace in our intervals,” he says. “But no more than that. As we get closer to the bigger races, our support paces inch closer to goal race pace.” Cabral champions this sentiment as well, and approaches the building of a better performance through his philosophy relating to the interdependence of time and space. “Time (watch time) and Space

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(or distance)—both of these together produce the pace,” he says. “This may sound like a basic concept, but for me all the questions about training distance runners are solved by this equation of time versus space—not physiology. Everything an athlete does in training must have some reference to the goal race pace.” Cabral feels that in the search for answers from a physiological standpoint, many coaches lose sight of the most important element of training—specificity—and namely, goal race pace.

Essentially, constructing a MAX LASS for the distance athlete (3K/5K/10K) or specific endurance for the middle distance runner (800/1500) is what specific training is all about. As Canova, Hudson, and Cabral have indicated, this can be achieved by training at aerobic support paces (slower than race pace), specific speed paces (no faster than 10% of goal race pace), and race pace training itself. In doing so, you’ll be armed with the capacity to be more fatigue-resistant at goal race pace velocity, and produce positive results come race day.



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